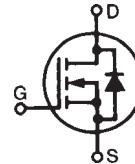


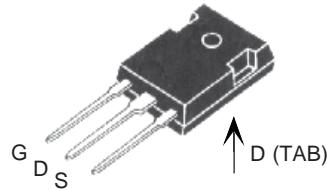
PolarHV™ HiPerFET Power MOSFETs

IXFH 140N10P
IXFT 140N10P
 $V_{DSS} = 100 \text{ V}$
 $I_{D25} = 140 \text{ A}$
 $R_{DS(on)} = 11 \text{ m}\Omega$

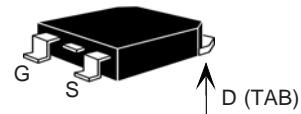
N-Channel Enhancement Mode
Fast Intrinsic Diode; Avalanche Rated



TO-247 (IXFT)



TO-268 (IXFT)



G = Gate
S = Source
TAB = Drain

Symbol	Test Conditions	Maximum Ratings		
V_{DSS}	$T_J = 25^\circ\text{C}$ to 175°C	100		V
V_{DGR}	$T_J = 25^\circ\text{C}$ to 175°C ; $R_{GS} = 1 \text{ M}\Omega$	100		V
V_{GSM}		± 20		V
I_{D25}	$T_c = 25^\circ\text{C}$	140		A
$I_{D(RMS)}$	External lead current limit	75		A
I_{DM}	$T_c = 25^\circ\text{C}$, pulse width limited by T_{JM}	300		A
I_{AR}	$T_c = 25^\circ\text{C}$	60		A
E_{AR}	$T_c = 25^\circ\text{C}$	80		mJ
E_{AS}	$T_c = 25^\circ\text{C}$	2.5		J
dv/dt	$I_s \leq I_{DM}$, $di/dt \leq 100 \text{ A}/\mu\text{s}$, $V_{DD} \leq V_{DSS}$, $T_J \leq 150^\circ\text{C}$, $R_G = 4 \Omega$	10		V/ns
P_D	$T_c = 25^\circ\text{C}$	600		W
T_J		-55 ... +175		$^\circ\text{C}$
T_{JM}		175		$^\circ\text{C}$
T_{stg}		-55 ... +150		$^\circ\text{C}$
T_L	1.6 mm (0.062 in.) from case for 10 s	300		$^\circ\text{C}$
M_d	Mounting torque (TO-247)	1.13/10	Nm/lb.in.	
Weight	TO-247 TO-268	6.0 5.0		g

Symbol	Test Conditions ($T_J = 25^\circ\text{C}$, unless otherwise specified)	Characteristic Values		
		Min.	Typ.	Max.
V_{DSS}	$V_{GS} = 0 \text{ V}$, $I_D = 250 \mu\text{A}$	100		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 4.0 \text{ mA}$	3.0		5.0 V
I_{GSS}	$V_{GS} = \pm 20 \text{ V}_{DC}$, $V_{DS} = 0$		± 100	nA
I_{DSS}	$V_{DS} = V_{DSS}$ $V_{GS} = 0 \text{ V}$ $T_J = 175^\circ\text{C}$		25 500	μA
$R_{DS(on)}$	$V_{GS} = 10 \text{ V}$, $I_D = 0.5 I_{D25}$ $V_{GS} = 15 \text{ V}$, $I_D = 300 \text{ A}$ Pulse test, $t \leq 300 \mu\text{s}$, duty cycle $d \leq 2 \%$	9	11	$\text{m}\Omega$

Features

- International standard packages
- Unclamped Inductive Switching (UIS) rated
- Low package inductance
 - easy to drive and to protect

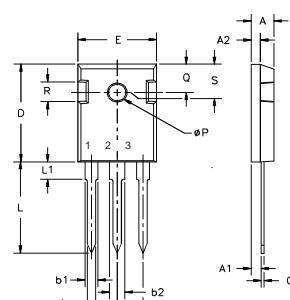
Advantages

- Easy to mount
- Space savings
- High power density

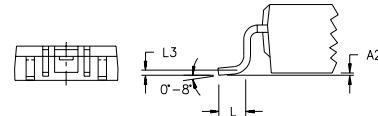
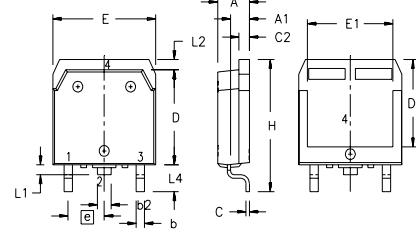
Symbol	Test Conditions	Characteristic Values		
		Min.	Typ.	Max.
g_{fs}	$V_{DS} = 10 \text{ V}$; $I_D = 0.5 I_{D25}$, pulse test	45	65	S
C_{iss} C_{oss} C_{rss}	$V_{GS} = 0 \text{ V}$, $V_{DS} = 25 \text{ V}$, $f = 1 \text{ MHz}$	4700	pF	
		1850	pF	
		600	pF	
$t_{d(on)}$ t_r $t_{d(off)}$ t_f	$V_{GS} = 10 \text{ V}$, $V_{DS} = 0.5 V_{DSS}$, $I_D = 60 \text{ A}$ $R_G = 4 \Omega$ (External)	35	ns	
		50	ns	
		85	ns	
		26	ns	
$Q_{g(on)}$ Q_{gs} Q_{gd}	$V_{GS} = 10 \text{ V}$, $V_{DS} = 0.5 V_{DSS}$, $I_D = 0.5 I_{D25}$	155	nC	
		33	nC	
		85	nC	
R_{thJC}			0.25 K/W	
R_{thCK}	(TO-247)	0.21		K/W

Source-Drain Diode
Characteristic Values
 $(T_J = 25^\circ\text{C}$, unless otherwise specified)

Symbol	Test Conditions	Min.	typ.	Max.
I_s	$V_{GS} = 0 \text{ V}$			140 A
I_{SM}	Repetitive			300 A
V_{SD}	$I_F = I_s$, $V_{GS} = 0 \text{ V}$, Pulse test, $t \leq 300 \mu\text{s}$, duty cycle $d \leq 2 \%$		1.5	V
t_{rr} Q_{RM}	$I_F = 25 \text{ A}$ $-di/dt = 100 \text{ A}/\mu\text{s}$ $V_R = 50 \text{ V}$	120	ns	
		0.8	μC	
I_{RM}		6	A	

TO-247 AD Outline

 Terminals: 1 - Gate
 2 - Drain
 3 - Source

Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.7	5.3	.185	.209
A ₁	2.2	2.54	.087	.102
A ₂	2.2	2.6	.059	.098
b	1.0	1.4	.040	.055
b ₁	1.65	2.13	.065	.084
b ₂	2.87	3.12	.113	.123
C	.4	.8	.016	.031
D	20.80	21.46	.819	.845
E	15.75	16.26	.610	.640
e	5.20	5.72	0.205	0.225
L	19.81	20.32	.780	.800
L1		4.50		.177
ØP	3.55	3.65	.140	.144
Q	5.89	6.40	0.232	0.252
R	4.32	5.49	.170	.216
S	6.15	BSC	242	BSC

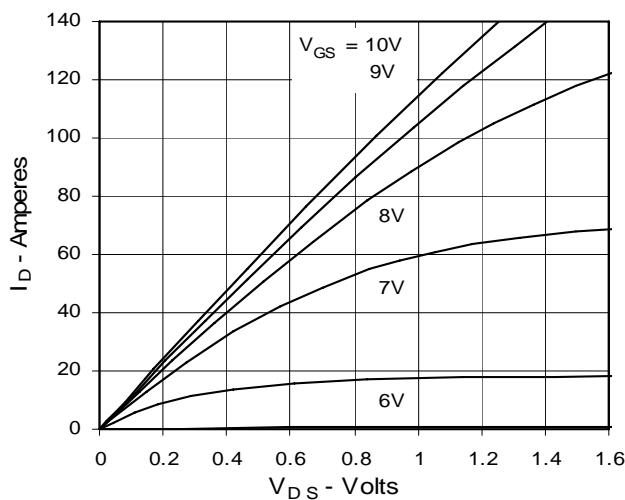
TO-268 Outline


SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.193	.201	4.90	5.10
A1	.106	.114	2.70	2.90
A2	.001	.010	0.02	0.25
b	.045	.057	1.15	1.45
b2	.075	.083	1.90	2.10
C	.016	.026	0.40	0.65
C2	.057	.063	1.45	1.60
D	.543	.551	13.80	14.00
D1	.488	.500	12.40	12.70
E	.624	.632	15.85	16.05
E1	.524	.535	13.30	13.60
e	.215	BSC	5.45	BSC
H	.736	.752	18.70	19.10
L	.094	.106	2.40	2.70
L1	.047	.055	1.20	1.40
L2	.039	.045	1.00	1.15
L3	.010	BSC	0.25	BSC
L4	.150	.161	3.80	4.10

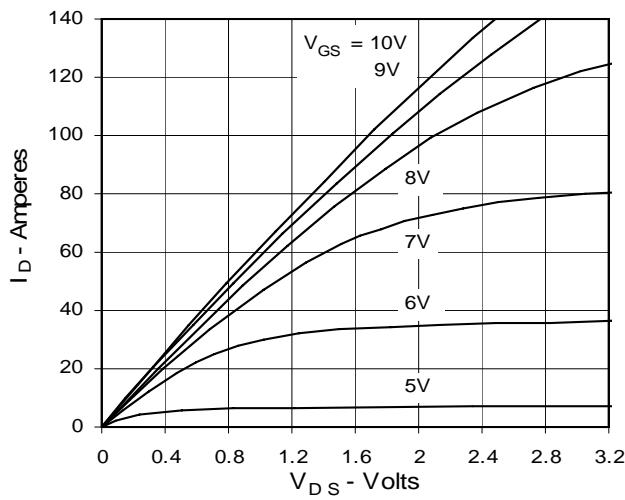
IXYS reserves the right to change limits, test conditions, and dimensions.

IXYS MOSFETs and IGBTs are covered by one or more of the following U.S. patents: 4,850,072, 4,931,844, 5,034,796, 5,063,307, 5,237,481, 5,381,025, 6,404,065B1, 6,162,665, 6,534,343, 6,583,505, 6,306,728B1, 6,259,123B1, 6,306,728B1, 6,683,344.

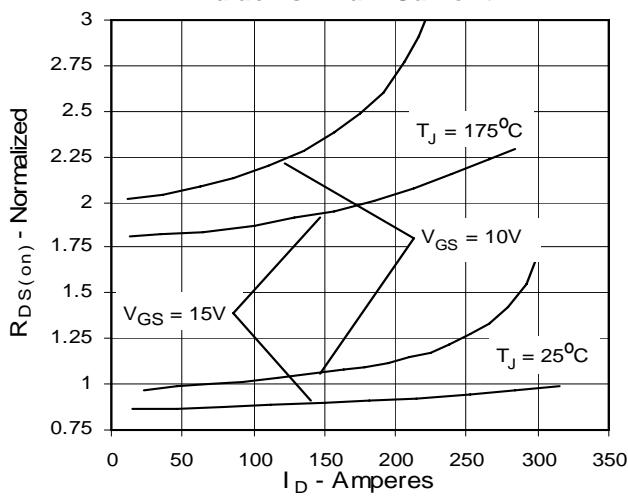
**Fig. 1. Output Characteristics
@ 25°C**



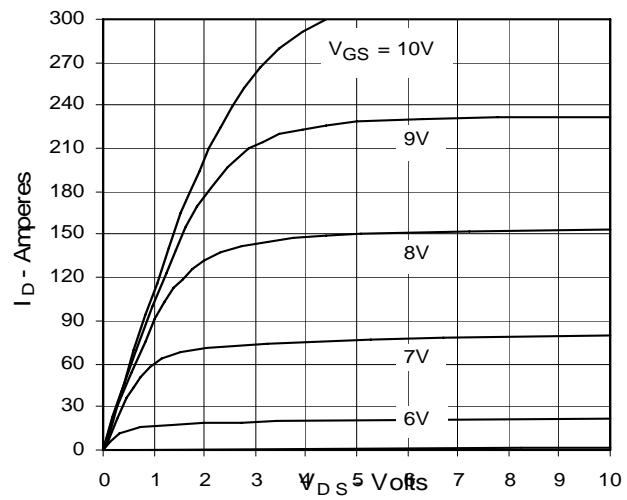
**Fig. 3. Output Characteristics
@ 150°C**



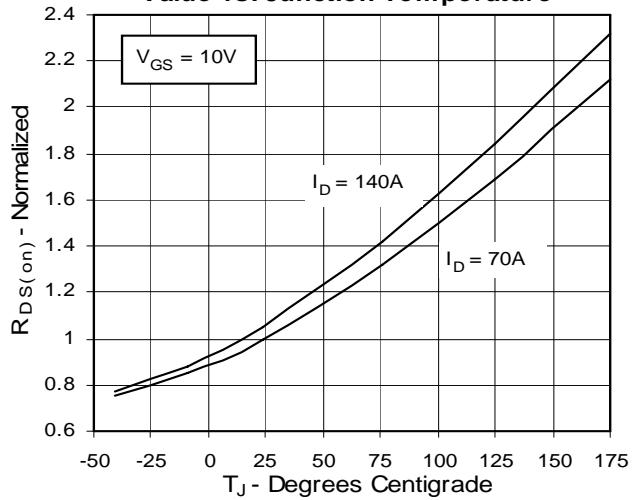
**Fig. 5. $R_{DS(on)}$ Normalized to 0.5 I_{D25}
Value vs. Drain Current**



**Fig. 2. Extended Output Characteristics
@ 25°C**



**Fig. 4. $R_{DS(on)}$ Normalized to 0.5 I_{D25}
Value vs. Junction Temperature**



**Fig. 6. Drain Current vs. Case
Temperature**

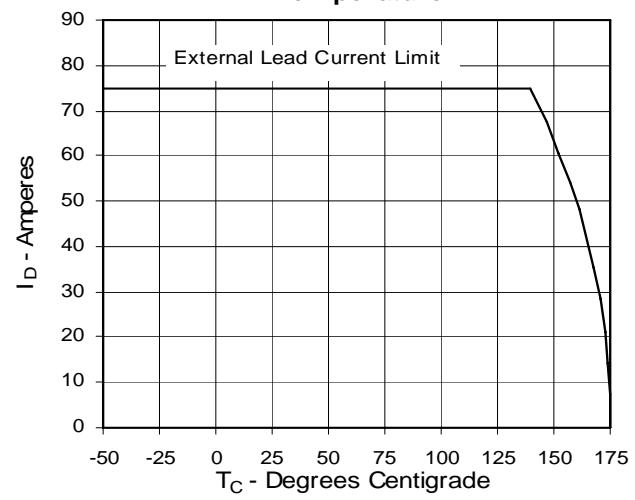


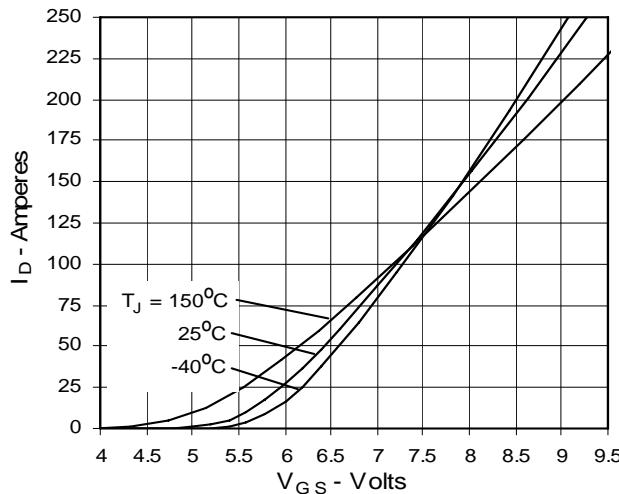
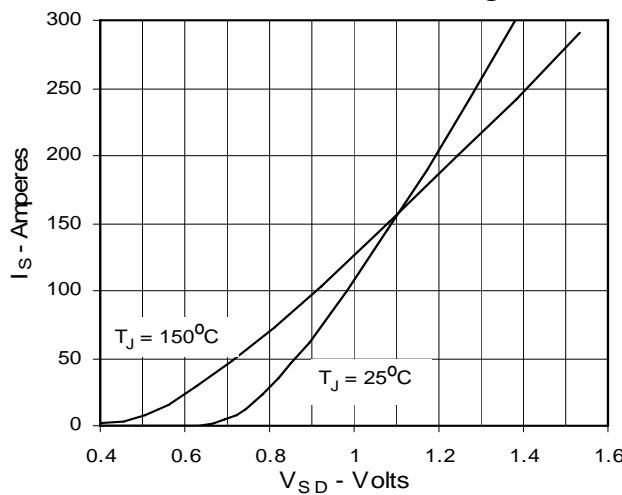
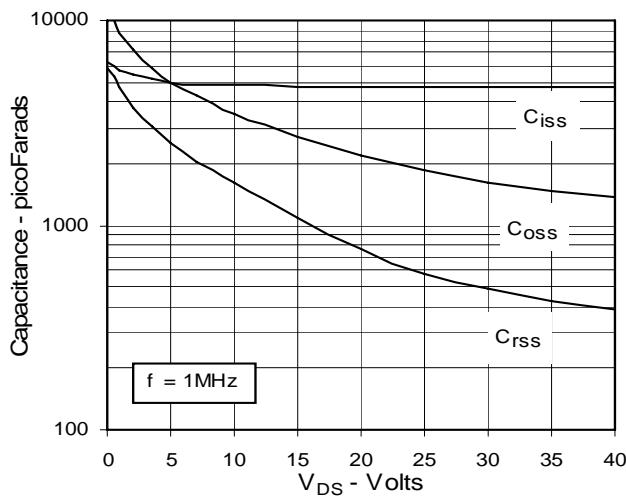
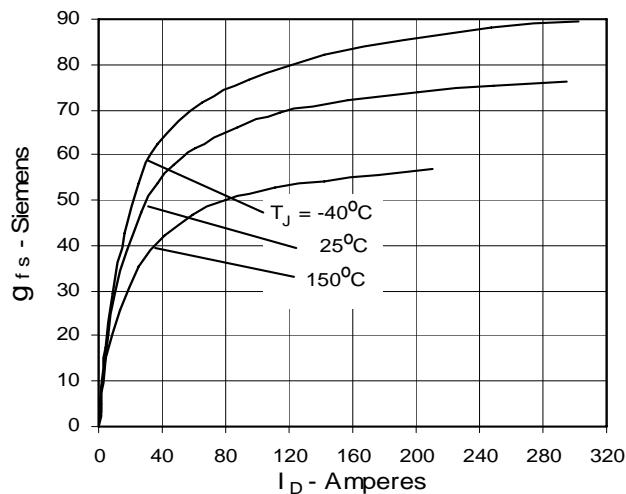
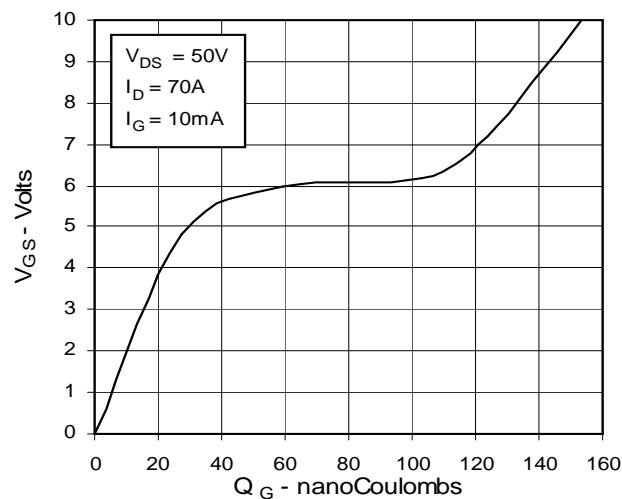
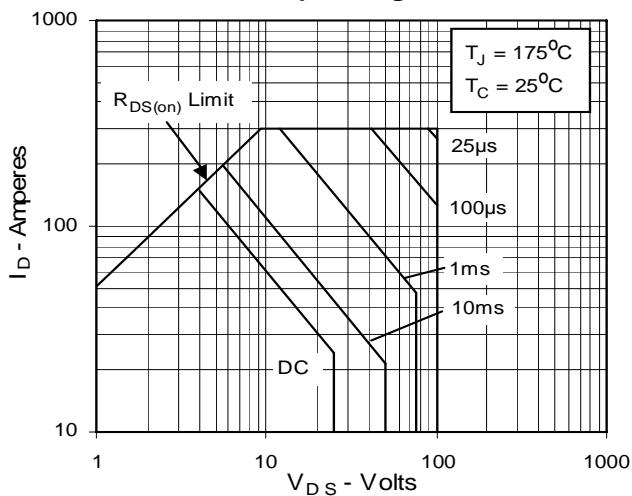
Fig. 7. Input Admittance

Fig. 9. Source Current vs. Source-To-Drain Voltage

Fig. 11. Capacitance

Fig. 8. Transconductance

Fig. 10. Gate Charge

Fig. 12. Forward-Bias Safe Operating Area


Fig. 13. Maximum Transient Thermal Resistance